Listing of Claims

Claims 1 – 22 (canceled).

23. (Presently Amended) A method of detecting a low power condition in a local area augmentation system, comprising:

receiving at least one global positioning satellite radio signal;

measuring an average wide band power associated with the radio signal;

measuring an average narrow band power associated with the radio signal;

calculating a signal-to-noise ratio of the radio signal from the wide band power and the narrow band power;

calculating a lower confidence limit of the signal-to-noise ratio, wherein the lower confidence limit is calculated at least in part from the calculated signal-to-noise ratio;

determining, from a the lower confidence limit, a low-power condition error contribution,

calculating a total error in a navigational measurement based at least in part on the low-power condition error contribution;

determining whether the total error exceeds an alert limit; and

issuing an alert if the total error exceeds the alert limit.

24. (Presently Amended)

A method of detecting a low power condition in a local area augmentation system, comprising:

receiving at least one global positioning satellite radio signal;

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measuring an average wide band power associated with the radio signal;

measuring an average narrow band power associated with the radio signal;

calculating a signal-to-noise ratio of the radio signal from the wide band power and the

narrow band power;

calculating a lower confidence limit of the signal-to-noise ratio;

determining, from the lower confidence limit, a low-power condition error contribution,

calculating a total error in a navigational measurement based at least in part on the low-

power condition error contribution;

determining whether the total error exceeds an alert limit; and

issuing an alert if the total error exceeds the alert limit

~~The method of claim 23,~~ wherein determining the lower confidence limit comprises

subtracting a confidence offset from the calculated signal-to-noise ratio.

25. (Previously Presented) The method of claim 24, wherein the confidence offset dS/No_low
is determined by the following equation:

$$P_{lim} = \int_{-dS/No\_low}^{\infty} pdf(x)\ dx.$$

26. (Previously Presented) The method of claim 23, wherein measuring a wide band power

includes averaging the wide band power over the first time period to obtain a value P_w , and wherein

measuring a narrow band power includes averaging the narrow band power over the second time

period to obtain a value P_n.

27. (Previously Presented) The method of claim 26, wherein the first time period has a length

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T, the second time period has a length that is M times as long as T, and the signal-to-noise ratio S/No is calculated according to the following equation.

$$S/No = 10 \log_{10} [\frac{1}{T} \frac{P_n - P_w}{MP_w - P_n}]$$

28. (Previously Presented) The method of claim 23, further comprising:

determining a navigational measurement based at least in part on the received radio signal;

wherein the low-power error contribution is an error in the navigational measurement.

29. (Presently Amended) In a local area augmentation system, a system for detecting a low-power condition comprising:

a receiver operative to receiving at least one global positioning satellite radio signal;

a wide band power estimator operative to measure an average wide band power;

a narrow band power estimator operative to measure an average wide band power;

a signal-to-noise ratio module operative to determine a signal-to-noise ratio from the estimated wide band power and the estimated narrow band power;

a confidence limit logic module operative to calculate a lower confidence limit of the signal-to-noise ratio, wherein the lower confidence limit is calculated at least in part from the calculated signal-to-noise ratio;

a total error module operative to calculate a total error based at least in part on the lower confidence limit; and

alert logic operative to determine whether the total error exceeds an alert limit and to issue an alert if the total error exceeds the alert limit.

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30. (New) A method of detecting a low power condition in a local area augmentation system, comprising:

receiving at least one global positioning satellite radio signal;

measuring an average wide band power associated with the radio signal;

measuring an average narrow band power associated with the radio signal;

calculating a signal-to-noise ratio of the radio signal from the wide band power and the narrow band power;

calculating a lower confidence limit of the signal-to-noise ratio;

determining, from the lower confidence limit, a low-power condition error contribution,

calculating a total error in a navigational measurement based at least in part on the low-power condition error contribution;

determining whether the total error exceeds an alert limit; and

issuing an alert if the total error exceeds the alert limit;

wherein measuring a wide band power includes averaging the wide band power over the first time period to obtain a value P_w , and wherein measuring a narrow band power includes averaging the narrow band power over the second time period to obtain a value P_n; and

wherein the first time period has a length T, the second time period has a length that is M times as long as T, and the signal-to-noise ratio S/No is calculated according to the following equation:

$$S/No = 10 \log_{10} [\frac{1}{T} \cdot \frac{P_n - P_w}{MP_w - P_n}]$$

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